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Remarks**Rejection of claims 11-26 as obvious over Jahier in combination with Berlowitz or Wittenbrink**

The examiner maintained the rejection of claims 11-26 as obvious under 35 U.S.C. §103(a) over Jahier in combination with Berlowitz et al. or Wittenbrink. Among other things, the examiner contends that the claims define a combination of elements known in the prior art, and that the combination must do more than yield a predictable result. The examiner contends that "[t]he language 'for reducing corrosion in a condensing boiler burning fuel' has not been given patentable weight because the recitation occurs in the preamble." Office action, pp. 3-4.

Response

The examiner is incorrect that the language related to reducing corrosion appears only in the preamble of the pending claims. The body of claim 11 specifically recites that "the channeling equipment exhibit[s] reduced corrosion compared to corrosion experienced burning a standard industrial gas oil fuel using the same condensing boiler under the same conditions." Claim 11.

Applicant respectfully requests that the examiner reconsider the claims, giving patentable weight to the foregoing limitation in the body of the claims.

The claims also specify "supplying liquid fuel comprising Fischer-Tropsch derived fuel to the condensing boiler; [and] combusting the liquid fuel under conditions effective to produce heated combustion gas." Claim 11. Claim 18 specifies that the Fischer-Tropsch derived fuel comprises a Fischer-Tropsch product, and that the density of the Fischer-Tropsch product is between 0.65 and 0.8 g/cm³ at 15°C.

The specification explains that condensing boilers normally use **natural gas** as fuel. Specification, paragraph [0003] (emphasis added). However,

[0004] A disadvantage of these apparatuses is that they cannot be easily applied in regions where no natural gas grid is present. A solution to this problem is to use a liquid fuel. Liquid fuels can be easily transported to and stored by the end user. **A disadvantage of the use of liquid fuels is however that the condensing boiler and/or the associated chimneys have to be made from different, more corrosion resistant materials.**

Id. at [0004] (emphasis added).

The specification cites several patents and/or applications that describe attempts to solve this problem. However:

These solutions are a disadvantage for the manufacturer of condensing boilers because it would result in **two types of boiler apparatuses, namely one operating on gas and one operating on liquid fuel**. Moreover the apparatus using a liquid fuel would be more expensive due to the different more corrosive-resistant material required.

Id. at ¶ [0004].

The examiner has not pointed to a teaching, suggestion, or any other motivation to supply existing condensing boilers with “liquid fuel comprising Fischer-Tropsch derived fuel” in order to avoid the need to provide two different condensing burner models--one for natural gas and one for liquid fuels.

Instead, the examiner points (a) to Jahier, describing a “[g]as condensing boiler” (Jahier, title) and, (b) to Berlowitz and Wittenbrink, describing Fischer-Tropsch derived fuels.¹ The examiner concludes that gas condensing boilers were known, that “clean” Fischer Tropsch derived fuels were “conventional in the art,” (office action, p. 2-3), and asserts that, “when a claim defines a combination of elements known in the prior art, the combination must do more than yield a predictable result. *KSR Int’l Co. v. Teleflex*, 127 S.Ct. 1727, 1740 (2007).

In fact, in *KSR*, the Supreme Court specifically observed that “inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 127 S.Ct. 1727, 82 U.S.P.Q.2d

¹ Jahier describes a gas condensing boiler comprising a “gas burner” comprises a “combustion chamber . . . supplied through the pipe 3b” and designed to produce “heat exchange between the gases produced by the burner and the water contained inside the elements 1 and 2.” Jahier, col. 2, ll. 42-49. According to Jahier:

[t]he main feature of the invention . . . resides in the fact that each of the one or two elements has means which are adapted to convey a portion of the incoming cold water directly towards the upper region which is proximate to the combustion chamber 3 and a portion of said water directly downwards, i.e., proximate to the condensing region, so as to meet, in a optimum manner, the dual requirement of protecting said combustion chamber and of causing an active condensation of the water vapor contained in the gases.

Jahier, col. 3, ll. 5-15.

1385, 1396 (U.S. 2007). For this reason, “[a] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, *independently, known in the prior art.*” *Id.* (emphasis added).

The examiner has the burden to establish a *prima facie* case of unpatentability of the pending claims. *In re Oetiker*, 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992). In order to establish that the pending claims are obvious, *the examiner must establish* that the claims are directed merely to “the predictable use of prior art elements according to their established functions.” *Id.* (emphasis added). The examiner has not met this burden.

The examiner has not even established that a “condensing boiler” would effectively burn liquid fuel comprising Fischer-Tropsch derived fuel (all claims). As explained in the specification (and specified in claim 18), suitable Fischer-Tropsch derived fuels typically have a density of between 0.65 and 0.8 g/cm³ at 15°C. Persons of ordinary skill in the art would understand that Fischer-Tropsch derived fuels would have different condensation properties than natural gas or a petroleum derived fuel.

For example, U.S. Patent No. 6,540,505 to Wuest (“Wuest”) relates to an evaporator burner. Wuest explains that, when operating an evaporator burner:

With kerosene or petroleum as fuel, it is possible, during burner start-up, to heat the kerosene or petroleum to the vaporization temperature in the vaporizing chamber by means of an electric heating device, but to subsequently switch off the electric heating device when the heating device together with the burner has been heated up to such an extent that the vaporization of the kerosene or petroleum is maintained by the sensible heat of the heating device. **With extra light heating oil, however, continuous operation of the electric heating device is necessary on account of the much higher vaporization temperature with this fuel.**

Wuest, col. 1, ll. 51-62 (emphasis added). The examiner has not established that similar problems would not arise using a condensing boiler. Wuest attempts to solve this problem by **modifying the burner.**

Applicants discovered that the corrosive nature of the condensate liquid by-product produced when a Fischer-Tropsch derived fuel was supplied to a condensing boiler was sufficiently low **that a condensing boiler suitable for gas firing could also be used for liquid fuel firing.** *Id.* at ¶ [0007]. As explained in the specification, “[s]ome small adjustments to the burner may be necessary. This is however **much less**

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cumbersome [than applying] different materials for, for example, the heat exchanging surfaces of the condensing boiler and/or the chimney.” *Id.* Hence, the claims provide “a condensing boiler solution for regions not equipped with a natural gas supply grid.” *Id.* at ¶ [0005].

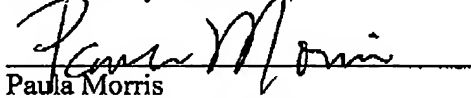
As seen from the foregoing, the examiner has not established that the claims are directed merely to “the predictable use of prior art elements according to their established functions.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. ____ 398, 127 S.Ct. 1727, 82 U.S.P.Q.2d 1385, 1396 (U.S. 2007) (emphasis added). Nor has the examiner established an apparent reason to combine known elements in the fashion claimed. *Id.*

For all of the foregoing reasons, Applicant respectfully requests that the rejection of claims 11-26 be withdrawn.

CONCLUSION

Applicant respectfully requests reconsideration and allowance of all of the pending claims for all of the foregoing reasons. The examiner is hereby authorized to charge any fees, and to deposit any overpayment of fees, to Deposit Account No. 19-1800 (File no. TS8578), maintained by Shell Oil Company.

Respectfully submitted,



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